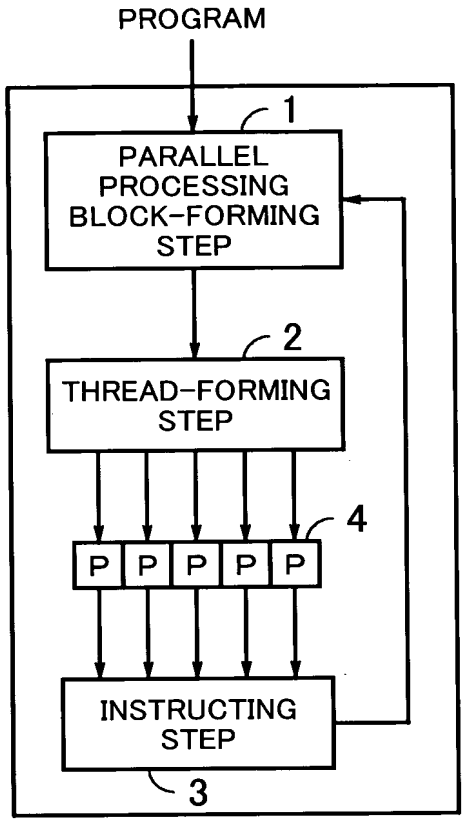
PROGRAM
1
PARALLEL PROCESSING BLOCK-FORMING STEP
2
THREAD-FORMING STEP
4
P
P
P
P
P
INSTRUCTING STEP
3

FIG. 1

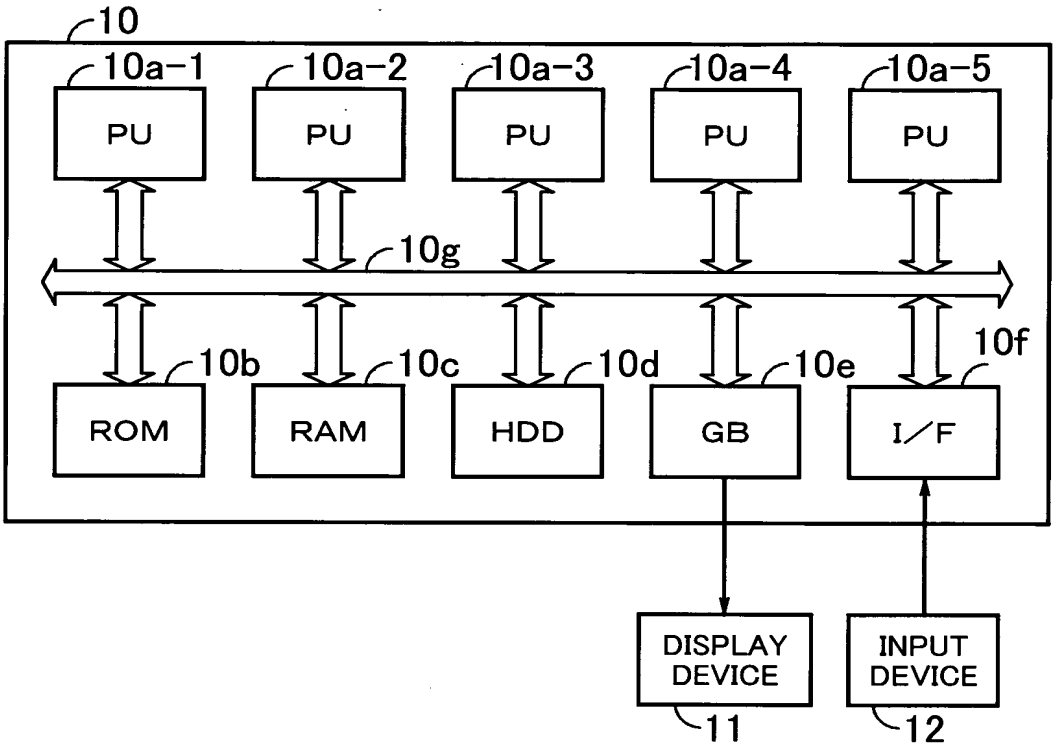
10
10a-1
10a-2
10a-3
10a-4
10a-5
PU
PU
PU
PU
PU
10g
10b
10c
10d
10e
10f
ROM
RAM
HDD
GB
I/F
DISPLAY DEVICE
11
INPUT DEVICE
12

FIG. 2

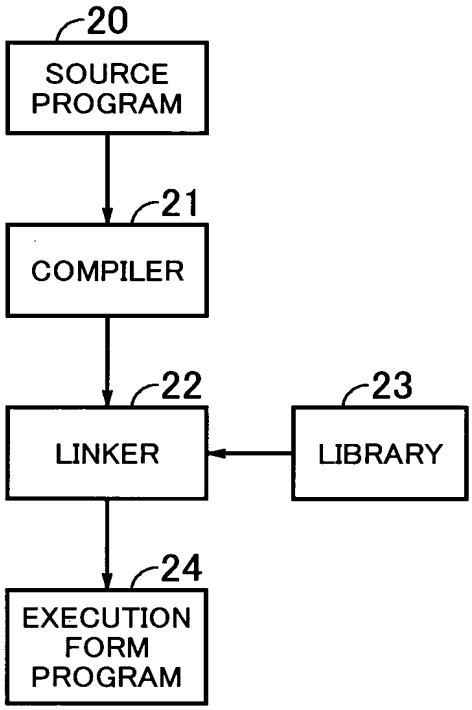
20
SOURCE PROGRAM
21
COMPILER
22
LINKER
23
LIBRARY
24
EXECUTION FORM PROGRAM

FIG. 3

```
1   INTEGER m(1000),n(2000),p(3000)
2
3   !$OMP PARALLEL
4       !$OMP DO
5           DO i=1,1000
6               m(i)=i
7           END DO
8       !$OMP END DO NOWAIT
9       !$OMP DO
10          DO i=1,2000
11              n(i)=i*2
12          END DO
13      !$OMP END DO NOWAIT
14      !$OMP DO
15          DO i=1,3000
16              p(i)=i*3
17          END DO
18      !$OMP END DO NOWAIT
19  !$OMP END PARALLEL
20  END
```

FIG. 4

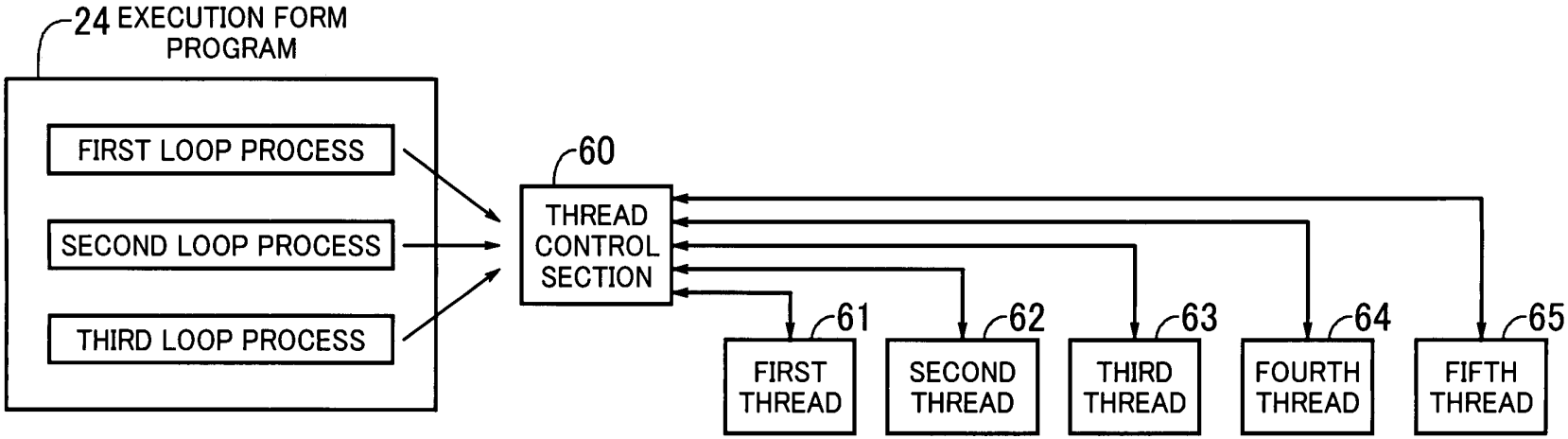
24 EXECUTION FORM PROGRAM
FIRST LOOP PROCESS
SECOND LOOP PROCESS
THIRD LOOP PROCESS
60
THREAD CONTROL SECTION
61
FIRST THREAD
62
SECOND THREAD
63
THIRD THREAD
64
FOURTH THREAD
65
FIFTH THREAD

FIG. 5

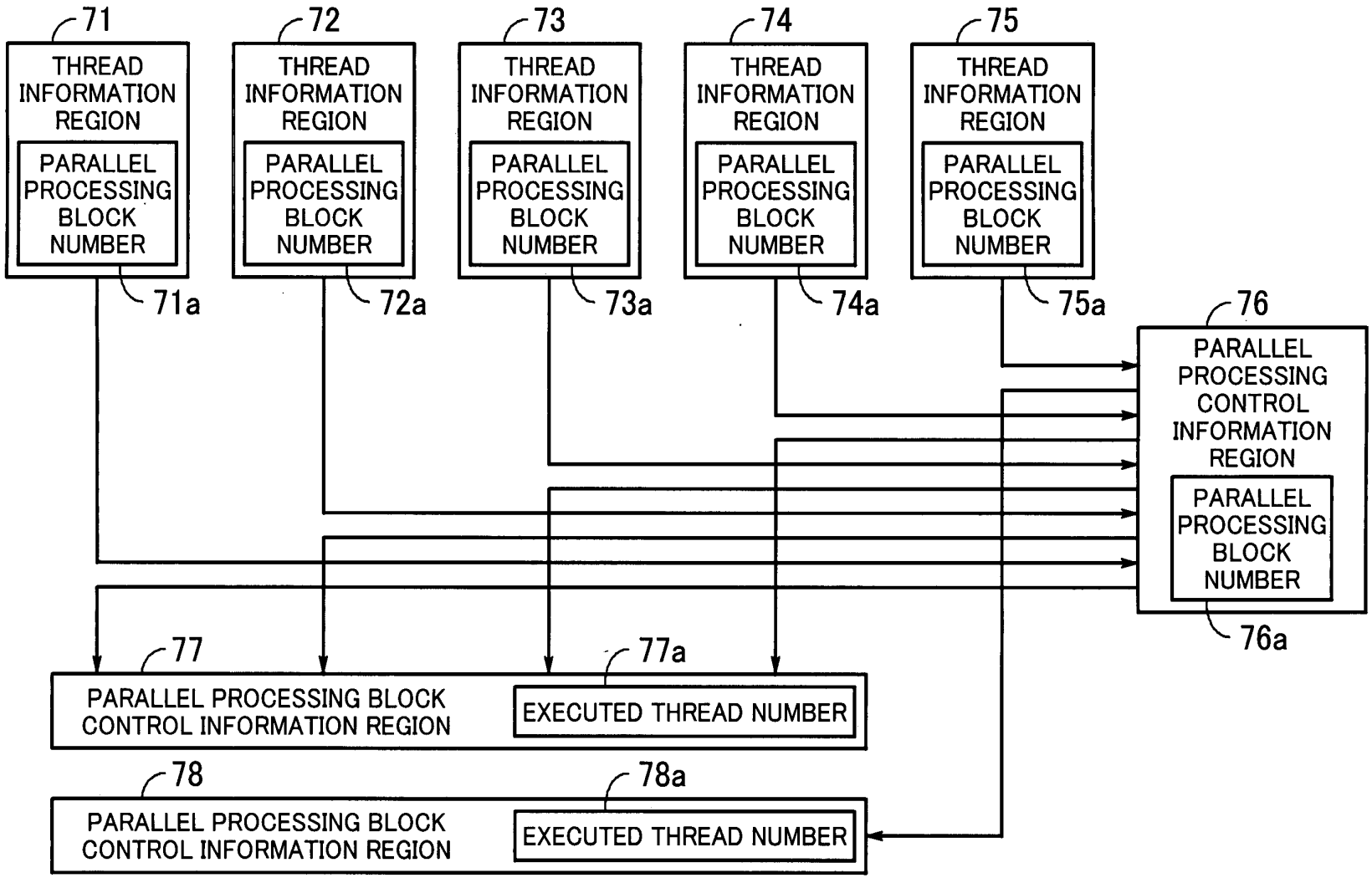
71
THREAD INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
71a
72
THREAD INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
72a
73
THREAD INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
73a
74
THREAD INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
74a
75
THREAD INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
75a
76
PARALLEL PROCESSING CONTROL INFORMATION REGION
PARALLEL PROCESSING BLOCK NUMBER
76a
77
PARALLEL PROCESSING BLOCK CONTROL INFORMATION REGION
77a
EXECUTED THREAD NUMBER
78
PARALLEL PROCESSING BLOCK CONTROL INFORMATION REGION
78a
EXECUTED THREAD NUMBER

FIG. 6

FIRST THREAD	SECOND THREAD	THRID THREAD	FOURTH THREAD	FIFTH THREAD	FOREMOST ONE
1	–	–	–	–	1
1	1	1	1	–	1
1	2	1	1	1	2
⋮	⋮	⋮	⋮	⋮	⋮
3	2	2	2	2	3
3	3	3	3	3	3

FIG. 7

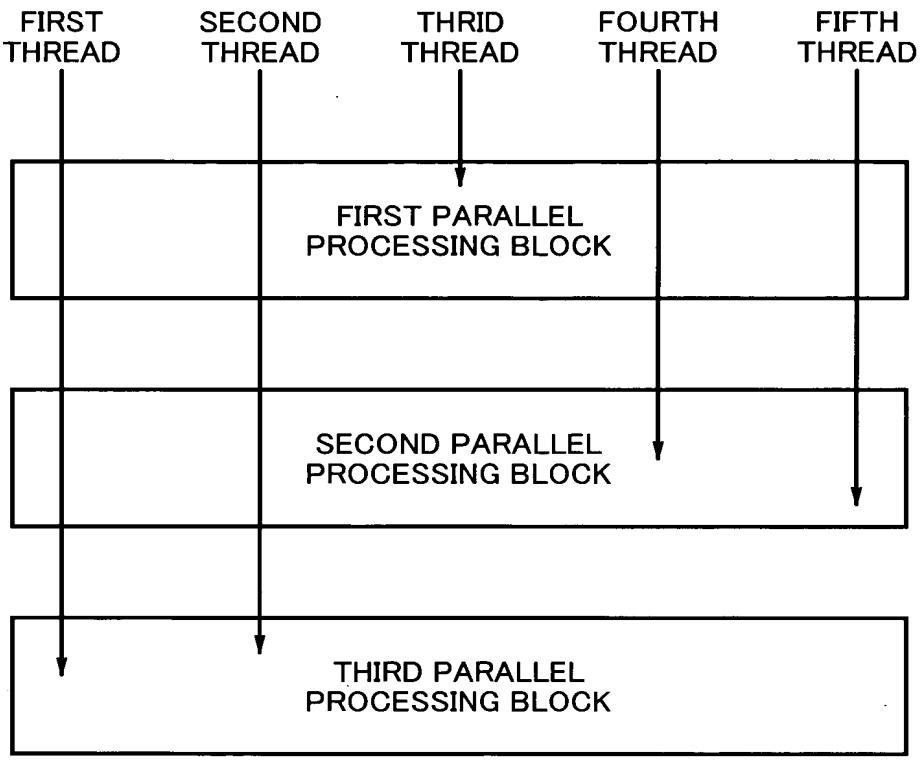
FIRST THREAD
SECOND THREAD
THRID THREAD
FOURTH THREAD
FIFTH THREAD
FIRST PARALLEL PROCESSING BLOCK
SECOND PARALLEL PROCESSING BLOCK
THIRD PARALLEL PROCESSING BLOCK

FIG. 8

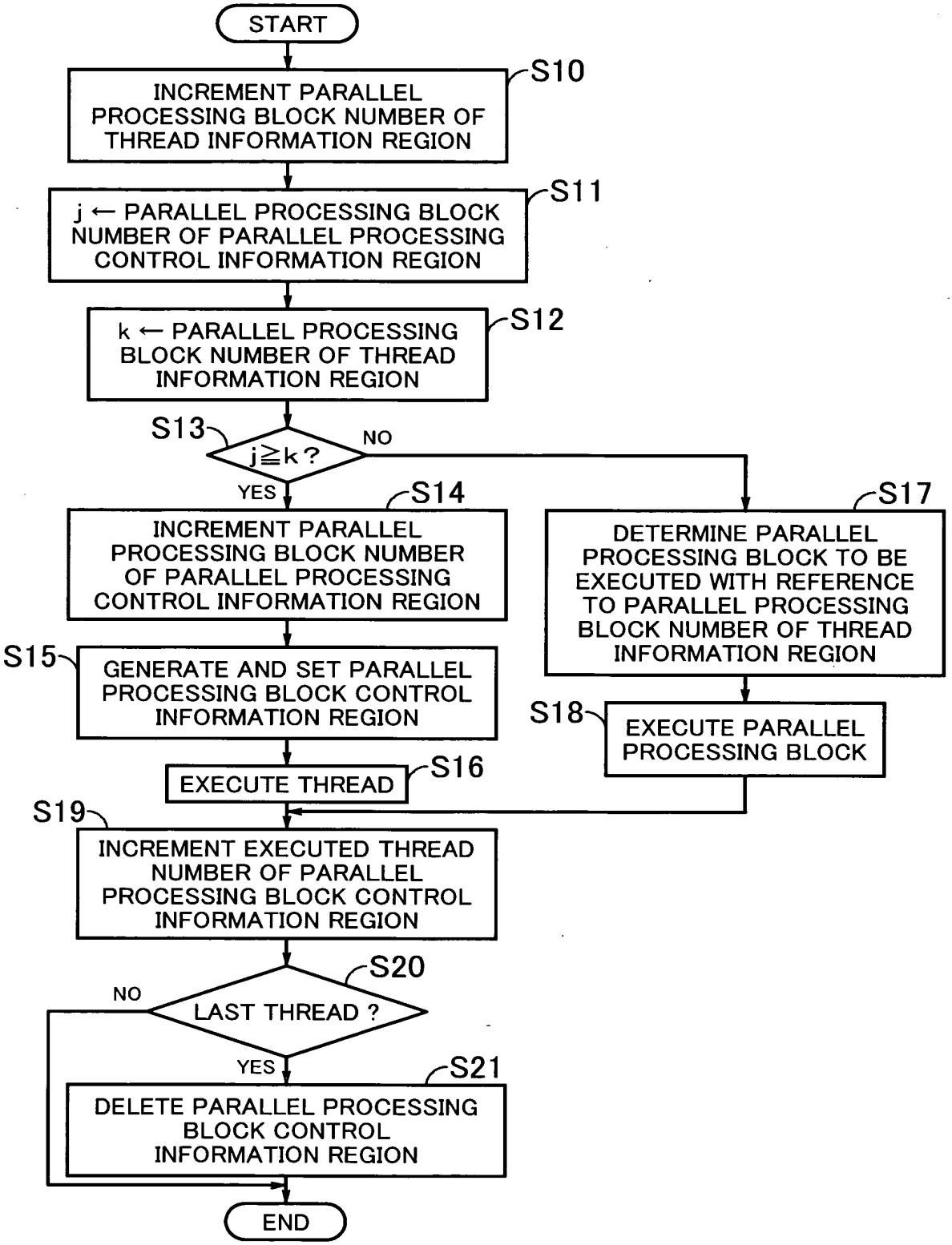
START
INCREMENT PARALLEL PROCESSING BLOCK NUMBER OF THREAD INFORMATION REGION
S10
j ← PARALLEL PROCESSING BLOCK NUMBER OF PARALLEL PROCESSING CONTROL INFORMATION REGION
S11
k ← PARALLEL PROCESSING BLOCK NUMBER OF THREAD INFORMATION REGION
S12
S13
j≧k ?
NO
YES
INCREMENT PARALLEL PROCESSING BLOCK NUMBER OF PARALLEL PROCESSING CONTROL INFORMATION REGION
S14
S15
GENERATE AND SET PARALLEL PROCESSING BLOCK CONTROL INFORMATION REGION
EXECUTE THREAD
S16
S17
DETERMINE PARALLEL PROCESSING BLOCK TO BE EXECUTED WITH REFERENCE TO PARALLEL PROCESSING BLOCK NUMBER OF THREAD INFORMATION REGION
S18
EXECUTE PARALLEL PROCESSING BLOCK
S19
INCREMENT EXECUTED THREAD NUMBER OF PARALLEL PROCESSING BLOCK CONTROL INFORMATION REGION
S20
NO
LAST THREAD ?
YES
S21
DELETE PARALLEL PROCESSING BLOCK CONTROL INFORMATION REGION
END

FIG. 9

TOSHIBA 99T6866

```
1  DO i=1,1000
2       k(i)=i*i
3  END DO
4
5  DO j=1,5000
6       k(j)=k(j)*j
7  END DO
```

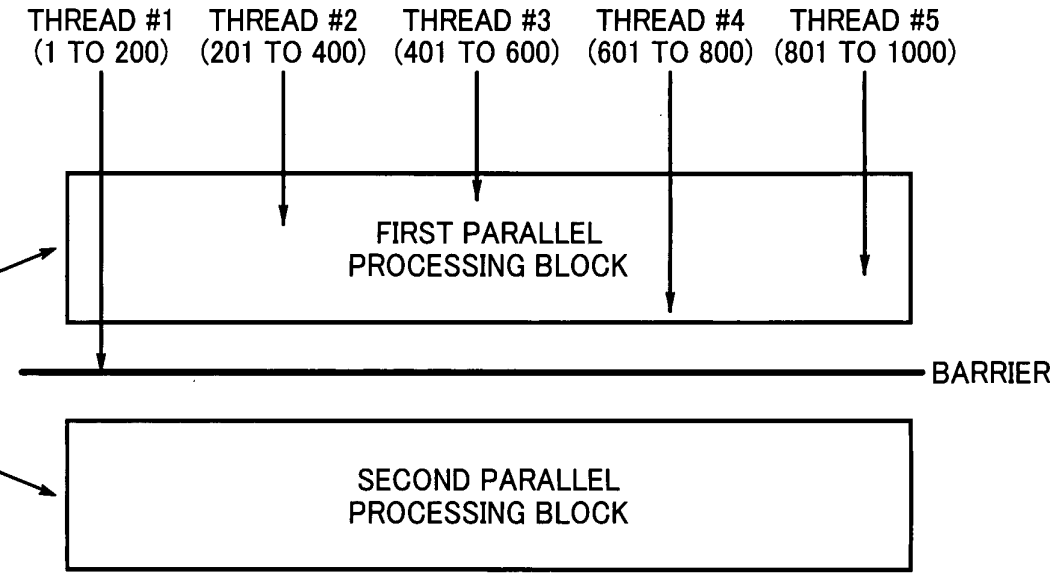

FIG. 10 PRIOR ART